

REMARKS

This is a full and timely response to the outstanding non-final Office Action mailed April 3, 2007. Through this response, claims 1 and 10 have been amended, claims 12 - 18 have been added, and claims 2, 9 and 11 have been canceled without prejudice, waiver, or disclaimer. Applicant reserves the right to pursue the subject matter of these canceled claims in a continuing application, if Applicant so chooses, and does not intend to dedicate the canceled subject matter to the public. Reconsideration and allowance of the application and pending claims are respectfully requested.

I. Claim Rejections - 35 U.S.C. § 102(e)

A. Statement of the Rejection

Claims 1 - 7, 10 and 11 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by *Mook*. ("*Mook*," U.S. Pat. No. 7,081,584). Applicants respectfully traverse these rejections. In particular, Applicant has canceled claims 2 and 11, thus rendering the rejection of these claims moot. Additionally, Applicant has amended claims 1 and 10, and respectfully asserts that that the rejections as to these and the remaining claims have been accommodated.

B. Discussion of the Rejection

It is axiomatic that "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W. L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983). Therefore, every claimed feature of the claimed invention must be represented in the applied reference to constitute a proper rejection under 35 U.S.C. § 102(e).

Independent Claim 1

1. An optical concentrator for a power generation solar cell comprising:
 - a Fresnel lens mounted over a solar cell to focus sunlight over the solar cell surface when the concentrator is aligned with the sun; and,
 - a secondary non-imaging concentrating element mounted intermediate the Fresnel lens and the solar cell and operative to redirect sunlight onto the solar cell surface when the concentrator is misaligned;
wherein the solar cell receives edge rays from the Fresnel lens at a periphery of an active surface of the solar cell with the concentrator aligned with the sun without the edge rays being reflected by the second non-imaging concentrating element;wherein the second non-imaging concentrating element has an exit aperture sized to a dimension equal to the periphery of the solar cell active surface.

(Emphasis added).

Applicant respectfully submits that *Mook* fails to teach or otherwise disclose at least the above-emphasized features of claim 1. In particular, *Mook* does not teach or otherwise disclose at least "wherein the solar cell receives edge rays from the Fresnel lens at a periphery of an active surface of the solar cell with the concentrator aligned with the sun without the edge rays being reflected by the second non-imaging concentrating element." Therefore, Applicant respectfully requests that the rejection be removed.

Independent Claim 10

10. An optical concentrator for a power generation solar cell comprising:
 - a Fresnel lens mounted over a solar cell to focus sunlight over the solar cell surface, the Fresnel lens having a convergence angle to direct edge rays within a periphery of an active surface of the solar cell with the concentrator aligned with the sun; and,
 - a secondary non-imaging concentrating element mounted intermediate the Fresnel lens and the solar cell and operative to redirect sunlight onto the solar cell surface, ***the secondary non-imaging concentrating element having predetermined optical characteristics to redirect edge rays***

within the periphery of the active surface of the solar cell when the concentrator is misaligned by a predetermined angle such that each of the edge rays is redirected using only one corresponding reflection;

wherein the secondary non-imaging concentrating element has an entrance aperture sized to receive edge rays within the convergence angle of the Fresnel lens when the concentrator is misaligned by the predetermined misalignment angle and an exit aperture sized to a dimension equal to the periphery of the solar cell active surface.

(Emphasis added).

Applicant respectfully submits that *Mook* fails to teach or otherwise disclose at least the above-emphasized features of claim 1. In particular, *Mook* does not teach or otherwise disclose at least "the secondary non-imaging concentrating element having predetermined optical characteristics to redirect edge rays within the periphery of the active surface of the solar cell when the concentrator is misaligned by a predetermined angle such that each of the edge rays is redirected using only one corresponding reflection." Therefore, Applicant respectfully requests that the rejection be removed.

II. Claim Rejections - 35 U.S.C. § 103(a)

A. Rejection of Claims 1 – 5 and 7 - 11

Claims 1 - 5 and 7 - 11 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over *O'Neill* ("*O'Neill*," U.S. Pat. No. 4,069,812). Applicant respectfully traverses these rejections. In particular, Applicant has canceled claims 2, 9 and 11, thus Additionally, Applicant has amended claims 1 and 10, and respectfully asserts that the rejections as to these and the remaining claims have been accommodated, thereby placing all pending claims in condition for allowance.

B. Discussion of the Rejection

The U.S. Patent and Trademark Office ("USPTO") has the burden under section 103 to establish a *prima facie* case of obviousness according to the factual inquiries

expressed in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). The four factual inquiries, also expressed in MPEP 2100-116, are as follows:

- (A) Determining the scope and contents of the prior art;
- (B) Ascertaining the differences between the prior art and the claims in issue;
- (C) Resolving the level of ordinary skill in the pertinent art; and
- (D) Evaluating evidence of secondary considerations.

Applicant respectfully submits that a *prima facie* case of obviousness is not established using the art of record.

Independent Claim 1

1. An optical concentrator for a power generation solar cell comprising:
 - a Fresnel lens mounted over a solar cell to focus sunlight over the solar cell surface when the concentrator is aligned with the sun; and,
 - a secondary non-imaging concentrating element mounted intermediate the Fresnel lens and the solar cell and operative to redirect sunlight onto the solar cell surface when the concentrator is misaligned;
 - wherein the solar cell receives edge rays from the Fresnel lens at a periphery of an active surface of the solar cell with the concentrator aligned with the sun without the edge rays being reflected by the second non-imaging concentrating element,***
 - wherein the second non-imaging concentrating element has an exit aperture sized to a dimension equal to the periphery of the solar cell active surface.***

(Emphasis added).

Applicant respectfully submits that the art of record, either individually or in combination, is legally deficient for the purpose of rendering claim 1 obvious. In particular, the art of record fails to teach or reasonably suggest at least the above-emphasized features of claim 1. Specifically, the art of record does not teach or reasonably suggest at least "wherein the solar cell receives edge rays from the Fresnel lens at a periphery of an active surface of the solar cell with the concentrator aligned

with the sun without the edge rays being reflected by the second non-imaging concentrating element" in combination with "wherein the second non-imaging concentrating element has an exit aperture sized to a dimension equal to the periphery of the solar cell active surface." Therefore, Applicant respectfully requests that the rejection be removed and that claim 1 be placed in condition for allowance.

Since independent claim 1 is allowable, Applicant respectfully asserts that dependent claims 3 - 8 are allowable as a matter of law for at least the reason that these dependent claims contain all elements of their respective base claim. See, e.g., *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Additionally, these claims recite other features that can serve as an independent basis for patentability.

Independent Claim 10

10. An optical concentrator for a power generation solar cell comprising:

a Fresnel lens mounted over a solar cell to focus sunlight over the solar cell surface, the Fresnel lens having a convergence angle to direct edge rays within a periphery of an active surface of the solar cell with the concentrator aligned with the sun; and,

a secondary non-imaging concentrating element mounted intermediate the Fresnel lens and the solar cell and operative to redirect sunlight onto the solar cell surface, ***the secondary non-imaging concentrating element having predetermined optical characteristics to redirect edge rays within the periphery of the active surface of the solar cell when the concentrator is misaligned by a predetermined angle such that each of the edge rays is redirected using only one corresponding reflection;***

wherein the secondary non-imaging concentrating element has an entrance aperture sized to receive edge rays within the convergence angle of the Fresnel lens when the concentrator is misaligned by the predetermined misalignment angle and an exit aperture sized to a dimension equal to the periphery of the solar cell active surface.

(Emphasis added).

Applicant respectfully submits that the art of record, either individually or in combination, is legally deficient for the purpose of rendering claim 10 obvious. In

particular, the art of record fails to teach or reasonably suggest at least the above-emphasized features of claim 10. Specifically, the art of record does not teach or reasonably suggest at least "the secondary non-imaging concentrating element having predetermined optical characteristics to redirect edge rays within the periphery of the active surface of the solar cell when the concentrator is misaligned by a predetermined angle such that each of the edge rays is redirected using only one corresponding reflection" in combination with "wherein the secondary non-imaging concentrating element has . . . an exit aperture sized to a dimension equal to the periphery of the solar cell active surface." Therefore, Applicant respectfully requests that the rejection be removed and that claim 10 be placed in condition for allowance.

Since independent claim 10 is allowable, Applicant respectfully asserts that dependent claims 13 - 18 are allowable as a matter of law for at least the reason that these dependent claims contain all elements of their respective base claim. See, *e.g.*, *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). Additionally, these claims recite other features that can serve as an independent basis for patentability.

III. New Claims

As identified above, claims 12 - 18 have been added through this Response. Applicant respectfully submits that these new claims add no new matter and are in condition for allowance for at least the reasons indicated above.

CONCLUSION

Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

Respectfully submitted,



M. Paul Qualey, Jr.
Registration No. 43,024

**THOMAS, KAYDEN,
HORSTEMEYER & RISLEY, L.L.P.**
Suite 1750
100 Galleria Parkway N.W.
Atlanta, Georgia 30339
(770) 933-9500